

WHAT IS CLAIMED IS:

1. A process for producing a masonry block having upper and lower faces, a front face, a rear face, opposed side faces, and an integral flange extending below the lower face of the block, the method comprising the steps of:

5 providing a mold having a plurality of side walls defining a mold cavity with an open top and an open bottom, a first side wall having an undercut portion adjacent the open bottom of the mold cavity;

10 positioning a pallet underneath the mold to temporarily close the open bottom of the mold cavity, whereby the pallet cooperates with the undercut portion of the first side wall to define a flange-forming subcavity of the mold cavity;

introducing dry cast masonry concrete into the mold cavity through the open mold top;

15 compacting the dry cast masonry concrete to form a pre-cured masonry block with the rear face of the block resting on the pallet and the front face of the block facing upward;

reopening the temporarily-closed bottom of the mold cavity;

discharging the pre-cured masonry block from the mold cavity through the reopened bottom of the mold cavity; and

curing the pre-cured masonry block.

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2. A masonry block produced by the process of claim 1.

25 3. The process of claim 1, which further includes the steps, following the introduction of dry cast masonry concrete into the mold cavity, of introducing a stripper shoe having a face that comprises a three-dimensional pattern into the mold cavity through the open top of the mold cavity, and pressing the patterned face of the stripper shoe on the dry cast masonry concrete contained in the mold cavity, to impart a pattern to the front face of the pre-cured masonry block.

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4. A masonry block produced by the process of claim 3.

5. The process of claim 3, wherein the pattern of the face of the stripper shoe simulates natural stone.

5 6. A masonry block produced by the process of claim 5.

7. The process of claim 5, wherein said compacting step includes vibrating the concrete contained in the mold cavity.

10 8. The process of claim 1, wherein a second side wall of the mold, which is generally perpendicular to said first side wall, includes a first converging side wall portion that is, immediately prior to the concrete-introducing step, oriented at an angle with respect to vertical, so that the mold cavity is wider at its top than it is at its bottom during the concrete-introducing and compacting steps, and wherein the first  
15 converging side wall portion of the mold is moveably mounted, and there is included the step of moving the first converging side wall portion to a position in which the bottom of the mold cavity is at least as wide as the top of the mold cavity to allow the pre-cured masonry block to be discharged through the reopened bottom of the mold cavity.

20 9. A masonry block produced by the process of claim 8.

10. The process of claim 8, wherein the side wall of the mold that is opposite the second side wall includes a second converging side wall portion which is opposite the first converging side wall portion, and wherein the second converging side  
25 wall portion is, immediately prior to the concrete-introducing step, oriented at an angle with respect to vertical, so that the mold cavity is wider at its top than it is at its bottom during the concrete-introducing and compacting steps, and wherein the second converging side wall portion is moveably mounted, and there is included the step of moving the second converging side wall portion to a position in which the bottom of the  
30 mold cavity is at least as wide as the top of the mold cavity to allow the pre-cured masonry block to be discharged through the reopened bottom of the mold cavity.

11. The process of claim 10, wherein the first and second converging portions of the side walls of the mold are biased to their pre-concrete introduction angled orientations by bias forces, and wherein the bias forces are released to permit the pre-cured masonry block to be discharged from the mold.

12. The process of claim 11, wherein the bias forces are provided by air bags.

13. The process of claim 1, wherein the temporarily closed bottom of the mold cavity is reopened, and the pre-cured masonry block is discharged through the open bottom of the mold cavity by lowering the pallet relative to the mold.

14. The process of claim 1 wherein said mold includes a plurality of said mold cavities which operate with a single pallet to mold a plurality of blocks at the same time.

15. A process for producing a masonry block having upper and lower faces, a patterned front face, a rear face and opposed side faces, a first of said side faces having a first converging portion that converges towards said second side face as the side faces extend toward said rear face, the method comprising the steps of:

providing a mold having a plurality of side walls defining a mold cavity with an open top and an open bottom, one side wall of the mold including a first converging side wall portion that is oriented at an angle with respect to vertical, so that the mold cavity is wider at its top than it is at its bottom;

positioning a pallet underneath the mold to temporarily close the open bottom of the mold cavity, whereby the pallet cooperates with the undercut portion of the first side wall to define a flange-forming subcavity of the mold cavity;

introducing dry cast masonry concrete into the mold cavity through the open mold top;

compacting the dry cast masonry concrete to form a pre-cured masonry block with the rear face of the block resting on the pallet and the front face of the block facing upward, said compacting step including introducing a stripper shoe having a face that comprises a three-dimensional pattern into the mold cavity through the open top of the mold cavity, and pressing the patterned face of the stripper shoe on the dry cast masonry concrete contained in the mold cavity, to impart a pattern to the front face of the pre-cured masonry block;

reopening the temporarily-closed bottom of the mold cavity;

moving the first converging side wall portion of the mold to a position in which the bottom of the mold cavity is at least as wide as the top of the mold cavity to allow the pre-cured masonry block to be discharged through the reopened bottom of the mold cavity;

discharging the pre-cured masonry block from the mold cavity through the reopened bottom of the mold cavity; and

curing the pre-cured masonry block.

16. A masonry block produced by the process of claim 15.

17. The process of claim 16, wherein said compacting step includes vibrating the concrete contained in the mold cavity.

18. The process of claim 15, wherein the side wall of the mold opposite said one side wall includes a second converging side wall portion which is opposite the first converging side wall portion, and wherein the second converging side wall portion is, immediately prior to the concrete-introducing step, oriented at an angle with respect to vertical so that the mold cavity is wider at its top than it is at its bottom during the concrete-introducing and compacting steps, and wherein the second converging side wall portion is moveably mounted, and including the step of moving said second converging wall portion to a position in which the bottom of the mold cavity is at least as wide as the top of the mold cavity to allow the pre-cured masonry block to be discharged through the reopened bottom of the mold cavity.

19. A masonry block produced by the process of claim 18.

20. The process of claim 18, wherein the first and second converging  
5 portions of the side walls of the mold are biased to their pre-concrete introduction angled  
orientations by bias forces, and wherein the bias forces are released to permit the pre-  
cured masonry block to be discharged from the mold.

21. The process of claim 20, wherein the bias forces are provided by  
10 air bags.

22. The process of claim 15, wherein the temporarily closed bottom of  
the mold cavity is reopened, and the pre-cured masonry block is discharged through the  
open bottom of the mold cavity by lowering the pallet relative to the mold.

23. The process of claim 15 wherein said mold includes a plurality of  
15 mold cavities which operate with a single pallet to mold a plurality of blocks at the same  
time.

24. A mold assembly for use in forming a pre-cured dry cast masonry  
20 block having upper and lower faces, a front face, a rear face, opposed side faces, and an  
integral flange extending below the lower face of the block, the mold assembly  
comprising:

a plurality of side walls defining a mold cavity having an open mold top  
25 and an open mold bottom, a first of said side walls including an undercut adjacent the  
open mold bottom that, along with a pallet that closes the bottom of the mold, defines a  
flange-forming subcavity of the mold cavity.

25. The mold assembly of claim 24 including a stripper shoe having a  
30 face that comprises a three-dimensional pattern for introduction into the mold cavity  
through the open top of the mold cavity to press the patterned face of the stripper shoe on

dry cast masonry concrete contained in the mold cavity, to impart a pattern to the front face of a pre-cured masonry block

26. The mold assembly of claim 25 wherein the pattern of the face of the stripper shoe simulates natural stone.

27. The mold assembly of claim 26, wherein said stripper shoe includes a flange surrounding the perimeter of the patterned face and said flange is arcuate so as to produce rounded edges on the front face of the masonry block.

28. The mold assembly of claim 24, wherein the remainder of said side wall with said undercut is substantially planar and extends substantially vertically.

29. The mold assembly of claim 24, wherein a second side wall of the mold, which is generally perpendicular to said first side wall, includes a first converging side wall portion that is moveably mounted so that it is movable between a position at an angle with respect to vertical so that the mold cavity is wider at its top than it is at its bottom when dry cast masonry concrete is introduced into the mold cavity, and a position in which the bottom of the mold cavity is at least as wide as the top of the mold cavity to allow the pre-cured masonry block to be discharged through the bottom of the mold cavity.

30. The mold assembly of claim 29 wherein the side wall of the mold opposite said second side wall includes a second converging side wall portion which is opposite the first converging side wall portion, and wherein the second converging side wall portion is moveably mounted so that it is movable between a position at an angle with respect to vertical so that the mold cavity is wider at its top than it is at its bottom when dry cast masonry concrete is introduced into the mold cavity, and a position in which the bottom of the mold cavity is at least as wide as the top of the mold cavity to allow the pre-cured masonry block to be discharged through the bottom of the mold cavity.

31. The mold assembly of claim 30, wherein said converging side wall portions are pivoted near ends thereof adjacent the open mold top.

5 32. The mold assembly of claim 30, further including a mechanism for biasing each of said converging side wall portions to the angled position.

33. The mold assembly of claim 32, wherein the mechanism for biasing each of said converging side wall portions comprises an air bag connected to each  
10 converging side wall portion.

34. The mold assembly of claim 30, wherein each of said converging side wall portions includes a substantially planar surface facing the mold cavity.

15 35. The mold assembly of claim 24 comprising a plurality of said mold cavities which operate with a single pallet to mold a plurality of blocks at the same time

36. A mold assembly for use in forming a pre-cured dry cast masonry block having upper and lower faces, a front face, a rear face, opposed side faces, and an  
20 integral flange extending below the lower face of the block, the mold assembly comprising:

a plurality of side walls defining a mold cavity having an open mold top and an open mold bottom, a first of said side walls of the mold includes a first converging side wall portion that is moveably mounted so that it is movable between a position at an  
25 angle with respect to vertical so that the mold cavity is wider at its top than it is at its bottom when dry cast masonry concrete is introduced into the mold cavity, and a position in which the bottom of the mold cavity is at least as wide as the top of the mold cavity to allow the pre-cured masonry block to be discharged through the bottom of the mold cavity; and

30 a stripper shoe having a face that comprises a three-dimensional pattern for introduction into the mold cavity through the open top of the mold cavity to press the

patterned face of the stripper shoe on dry cast masonry concrete contained in the mold cavity, to impart a pattern to the front face of a pre-cured masonry block.

37. The mold assembly of claim 36 wherein the pattern of the face of the stripper shoe simulates natural stone.

38. The mold assembly of claim 37, wherein said stripper shoe includes a flange surrounding the perimeter of the patterned face and said flange is arcuate so as to produce rounded edges on the front face of the masonry block.

39. The mold assembly of claim 36 wherein the side wall of the mold opposite said one side wall includes a second converging side wall portion which is opposite the first converging side wall portion, and wherein the second converging side wall portion is moveably mounted so that it is movable between a position at an angle with respect to vertical so that the mold cavity is wider at its top than it is at its bottom when dry cast masonry concrete is introduced into the mold cavity, and a position in which the bottom of the mold cavity is at least as wide as the top of the mold cavity to allow the pre-cured masonry block to be discharged through the bottom of the mold cavity.

40. The mold assembly of claim 39, wherein said converging side wall portions are pivoted near ends thereof adjacent the open mold top.

41. The mold assembly of claim 39, further including a mechanism for biasing each of said converging side wall portions to the angled position.

42. The mold assembly of claim 41, wherein the mechanism for biasing each of said converging side wall portions comprises an air bag connected to each converging side wall portion.



43. The mold assembly of claim 39, wherein each of said converging side wall portions includes a substantially planar surface facing the mold cavity.

44. The mold assembly of claim 36 comprising a plurality of said mold  
5 cavities which operate with a single pallet to mold a plurality of blocks at the same time

45. A mass produced dry cast concrete masonry block suitable for use in building soil retaining walls, comprising:

an upper face;

10 a lower face suitable for engaging said upper face of an adjacent block to maintain a generally parallel relationship between the upper faces of blocks in successive courses of blocks when the blocks are stacked together to form a wall;

a patterned front face that joins said upper and lower faces, the pattern having been imparted to the front face of the block during the molding process by the  
15 action of a moveable stripper shoe having a mirror image of the patterned front face;

a rear face;

a first generally vertical side face joining said front and rear faces;

a second generally vertical side face opposed to the first side face and joining said front and rear faces; and

20 a flange extending below said lower face of the block to provide a surface suitable for engaging the block with the rear face of a different block in the course below said block to thereby provide a pre-determined set-back to a retaining wall constructed from such block.

25 46. The masonry block of claim 45, wherein a first converging portion of said first side face converges towards said second side face as the side faces extend toward said rear face, and wherein said first converging portion is formed by a moveable mold surface during the molding process.

30 47. The masonry block of claim 46 further including a second converging portion of said second side face, that converges towards said first side face as

the side faces extend toward said rear face, and wherein said second converging portion is formed by a moveable mold surface during the molding process.

5           48.     The masonry block of claim 45 wherein the front face of the block is generally vertical.

10           49.     The masonry block of claim 45 wherein the front face is oriented so that its upper edge where it intersects the upper face of the block is closer to the rear face of the block than is its lower edge where it intersects the lower face of the block.

15           50.     The masonry block of claim 48 wherein the upper edge of the front face is closer to the rear face of the block than is its lower edge by a distance which is approximately equal to the pre-determined set back.

20           51.     The masonry block of claim 45, wherein at least a portion of each side face is textured during the molding process.

25           52.     The masonry block of claim 45, wherein said patterned front face of said block has a relief of at least 0.5 inches.

30           53.     A mass produced dry cast concrete masonry block suitable for use in building soil retaining walls, comprising:

an upper face;

25           a lower face suitable for engaging said upper face of an adjacent block to maintain a generally parallel relationship between the upper faces of blocks in successive courses of blocks when the blocks are stacked together to form a wall;

30           a patterned front face that joins said upper and lower faces, the pattern having been imparted to the front face of the block during the molding process by the action of a moveable stripper shoe having a mirror image of the patterned front face;

a rear face;

a first generally vertical side face joining said front and rear faces;

a second generally vertical side face opposed to the first side face and joining said front and rear faces; and

wherein a first converging portion of said first side face converges towards said second side face as the side faces extend toward said rear face, and wherein said first  
5 converging portion is formed by a moveable mold surface during the molding process.

54. The masonry block of claim 53 further including a second converging portion of said second side face opposite said first converging portion of said first side face, said second converging portion converging towards said first side face as  
10 the side faces extend toward said rear face, and wherein said second converging portion is formed by a moveable mold surface during the molding process.

55. The masonry block of claim 53 wherein the front face of the block is generally vertical.  
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56. The masonry block of claim 53 wherein the front face is oriented so that its upper edge where it intersects the upper face of the block is closer to the rear face of the block than is its lower edge where it intersects the lower face of the block.

57. The masonry block of claim 55 wherein the upper edge of the front face is closer to the rear face of the block than is its lower edge by a distance which is approximately equal to the pre-determined set back.  
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58. The masonry block of claim 53, wherein at least a portion of each  
25 side face is textured during the molding process.

59. The masonry block of claim 53, wherein said patterned front face of said block has a relief of at least 0.5 inches.